

REMARKS

Applicants respectfully traverse and request reconsideration.

Applicants wish to thank the Examiner for notice that Claims 4, 14 and 21 would be allowable if rewritten to include limitations of intervening claims.

Claims 1-2, 5-9, 20, 22 and 24-26 stand rejected under 35 USC § 102(b) as being anticipated by U.S. Patent No. 5,727,220 ("Luken").

The Luken reference is directed toward a method and apparatus for rendering polygons. This reference describes a method for rendering polygons that are subject to clipping. The Luken reference avoids lighting calculations and normal vector transformations for trivially rejected polygons while processing polygons on a vertex-by-vertex basis. This is done by coupling the lighting calculations with the clipping tests. If a tested vertex lies within the view volume, lighting calculations are performed for that vertex. If the polygon lies entirely outside the view volume, no lighting calculations are performed for any of the vertices of the polygon.

The rejected independent claims 1 and 20 have been amended to include the claim limitations of claims 10 and 27, respectively. Claims 1 and 20 now include as limitations the ability to tessellate based on a tessellation level, wherein the tessellation level determines the number of component primitives included in the plurality of component primitives. The amendments reflect the Applicants' belief that the additional limitations of claims 10 and 27 (the use of a specified tessellation level) add patentable material, as described below. In light of these amendments, claims 1 and 20 are believed to be allowable.

As to claims 2 and 22, the Office Action refers to these claims as claiming a method for calculating the component vertex parameters using Nth order interpolation. Claims 2 and 22 do not claim this method, but rather claim a method of linear interpolation. The Applicants respectfully request a clarification on this issue. Furthermore, the Applicants believe that claims 2 and 22 are allowable because they rely upon allowable base claims and contain further patentable material.

As to claims 5-9 and 24-26, the Applicants believe that these claims are allowable because they rely upon allowable base claims and because they contain further patentable material.

Claims 3, 10, 23 and 27 stand rejected under 35 USC § 103(a) as being unpatentable by Luken in view of U.S. Patent No. 5,488,684 (“Gharachorloo”).

The Gharachorloo reference is directed toward a method and apparatus for rendering trimmed parametric surfaces. The method processes trimmed NURBS surfaces representing a mapping from U and V parametric coordinates to X, Y and Z geometric coordinates and having a trimming region bound by a trim polyline. The Gharachorloo reference utilizes primitives in the shape of rectangles to render parametric surfaces subject to clipping. The UV parametric surface is divided into contiguous U and V intervals intersecting to form UV rectangles. The trim polyline (clipping boundary) intersects a subset of the UV rectangles to divide each of the rectangles of the subset into at least one polygon lying within the trimming region and at least one polygon lying outside the trimming region. The method then determines the vertices formed by the intersection of the trim polyline and the UV rectangle, and this data is then provided to a concave polygon processor to render the polygon.

As to claims 10 and 27, the Office Action cites the Gharachorloo reference as disclosing tessellating based on a tessellation level, wherein the tessellation level determines the number of component primitives included in the plurality of component primitives. The cited portion of the Gharachorloo reference does not teach the use of a tessellation level to determine the number of component primitives included in the plurality of component primitives. The cited portion of the Gharachorloo reference merely discloses, in the background section, a method to “convert the trimming curve to a trim polyline ... approximating the trimming curve in parametric coordinate space.” This method merely provides a solution to the problem when irregular polygons must be approximated as a result of clipping (from the trimming region). The reference does not disclose the ability to control the tessellation level which determines the number of component primitives used to represent the original primitive. Therefore, the Applicants believe that claims 10 and 27 contain novel, patentable material. The limitations of claims 10 and 27 have been incorporated, through amendment, into the independent claims 1 and 20, respectively. The applicants believe that these amendments make claims 1 and 20 allowable.

Claims 4 and 21 stand rejected under 35 USC § 103(a) as being unpatentable by Luken in view of Owen, “Phong Shading Model for Scan-Line Graphics.”

As to claims 4 and 21, the Office action has previously stated that claims 4 and 21 would be allowable if rewritten in independent form because “no prior art anticipates or suggests re-

normalizing the component vector included in the component vertex parameters for each of the component vertices.” This being the case, the Applicants respectfully state that claims 4 and 21 cannot be rejected under Luken in view of Owen, because neither the Luken or Owen references teach the claim limitations of claims 4 and 21. Furthermore, the Applicants believe that these claims are allowable because they rely upon allowable base claims and because they contain further patentable material.

Claims 11, 13, 15 and 17-19 stand rejected under 35 USC § 103(a) as being unpatentable by Luken in view of U.S. Patent No. 5,854,631 (“Akeley”).

The Akeley reference is directed toward a system and method for merging pixel fragments based on depth range values. This is a system for handling surfaces at multiple depths while rendering objects on a display. According to the invention, when a pixel fragment is received, its depth range is checked. If the depth range of the newly received fragment overlaps with the depth range of a previously-received fragment (i.e. an existing fragment), the new fragment is merged with the existing fragment.

The rejected independent claim 11 has been amended to include the claim limitations of claim 12. Claim 11 now includes as a limitation the ability to tessellate based on a tessellation level, wherein the tessellation level determines the number of component primitives included in the plurality of component primitives. The amendment reflects the Applicants’ belief that the additional limitation of claim 12 (the ability to tessellate based on a tessellation level) adds patentable material, as described below. In light of this amendment, claim 11 is believed to be allowable.

As to claims 13, 15 and 17-19, the Applicants believe that these claims are allowable because they rely upon allowable base claims and because they contain further patentable material.

Claims 12 and 16 stand rejected under 35 USC § 103(a) as being unpatentable by Luken in view of Akeley and further in view of Gharachorloo.

As to claims 12, the Applicants respectfully restate the relevant remarks made with respect to claims 10 and 27. The Gharachorloo reference does not disclose the ability to control the tessellation level which determines the number of component primitives used to represent the original primitive. Therefore, the Applicants believe that claim 12 contains novel, patentable

material. The limitations of claim 12 have been incorporated into the independent claim 11. The applicants believe that this amendment makes claim 11 allowable.

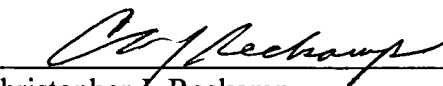
As to claim 16, the Applicants believe that this claim is allowable because it relies upon allowable base claims and because it contains further patentable material.

Claim 14 stands rejected under 35 USC § 103(a) as being unpatentable by Luken in view of Akeley and further in view of Owen.

As to claim 14, the Applicants respectfully restate the relevant remarks made with respect to claims 4 and 21. Neither the Luken, Akeley or Owen references disclose the claims limitations of claim 14. Furthermore, the Applicants believe that this claim is allowable because it relies upon an allowable base claim and because it contains further patentable material.

Applicants respectfully submit that the claims are now in condition for allowance and an early Notice of Allowance is earnestly solicited. The Examiner is invited to telephone the below-listed attorney if the Examiner believes that a telephone conference will expedite the prosecution of the application.

Respectfully submitted,

By: 
Christopher J. Reckamp
Registration No. 34,414

Date: June 18, 2003

Vedder, Price, Kaufman & Kammholz
222 North LaSalle Street
Chicago, Illinois 60601
Phone: (312) 609-7599
Fax: (312) 609-5005